AIRCREW TEAM MANAGEMENT PROGRAM

Flight Standards Division
Trans Australia Airlines

Charles Margerison, Ph.D*
Dick McCann, Ph.D*
Rod Davies, M.Psych.*
University of Queensland

INTRODUCTION

This paper is designed for circulation at the NASA/MAC Workshop on Cockpit Resource Management in the Cockpit, May 1986. The paper outlines the key features of the Aircrew Team Management Workshop which we have designed for and in consultation with Trans Australia Airlines. The paper will be in five major sections dealing with:

    A) A Profile of the Airline and the Designers

    B) Aircrew Consultation and Involvement

    C) Educational Design and Development

    D) Implementation and Instruction

    E) Evaluation and Assessment

SECTION A: THE AIRLINE AND THE DESIGNERS

Trans Australia Airlines (TAA) is a government-owned airline flying to all major cities and towns within Australia and operating on some international routes in the West Pacific. It has a fleet of Fokkers, DC-9's, Boeing 727's and the Airbus 300. There are over six hundred pilots and flight engineers.

The airline has a first-class safety record. It was to maintain and enhance this safety record that the senior management of the airline decided to introduce special training for crew members on teamwork issues, given the evidence that human factors

*Charles J. Margerison is Professor of Management and Rod Davies is a Senior Research Assistant at Queensland University, Brisbane, Australia. Dick McCann is Managing Director of McCann and Associates and a Fellow of the International Management Centre from Buckingham, U.K. and Visiting Researcher at Queensland University. Trans Australia Airlines Steering Committee Members: Captains R. Baker, J. Davidson, W. Parry, R. Vuillermin and Flight Engineer P. Bacon.

are a major cause of aviation accidents and are regularly mentioned in incident reports. The program called Aircrew Team Management (ATM) is described here in the critical context of its design and development.

Following a 2-year review of other cockpit human-factors programs, the executives in charge of the flight standards department of Trans Australia Airlines decided to adopt a "tailor-made" rather than an "off the shelf" approach. TAA developed the objectives for such a program and invited us as educational designers and architects to submit proposals based on our successful work with other large organizations in the oil, banking, manufacturing industries and other sectors. We had no previous experience in the aviation industry, nor did our team have any knowledge of flying. Our expertise and experience lies in educational design and technology combined with a strong background in organizational and social psychology. One of our areas of strength is team development. We have created a wide range of technology to enable individuals and teams to identify how they can improve their performance. It was this social technology for developing team skills that led the airline to establish with us a joint venture on Aircrew Team Management.

SECTION B: AIRCREW CONSULTATION AND INVOLVEMENT

The Critical Importance of Consultation

We started the project by establishing a consultative network amongst aircrew. Our aim was to find out the key issues of effective and ineffective cockpit management as perceived by line pilots and flight engineers, as well as by check airmen. This was clearly essential for our understanding, but of even greater importance was the commitment it engendered through the involvement of line crew. The process of consultation is often overlooked or ignored and crew are sent on courses designed "for them" rather than "with them". The result is imposition rather than cooperation.

We therefore tried to get as wide a representation as possible in our meetings. We had a number of consultative group meetings which included over a hundred aircrew, union and management representatives. Thus we were able to ensure that all the major issues of concern were included in the final design. The various consultation processes supported by the senior management of TAA are outlined below.

The Steering Committee

A group, comprised of management and line flight crew members, representatives of both the pilots' and engineers' unions, plus the three university design team members established the Steering Committee. This group met regularly on a monthly basis during the early phases to set policy and guidelines and provide a two-way consultative channel.

Workshop with Check Airmen

An intensive two-day workshop with a sample of check airmen was conducted to gather their views and opinions on the key team management issues they felt should be

addressed.

Meeting with Line Crew Representatives

A larger meeting was held for two days with flight engineers and pilots on all aircraft types, to ascertain their views on the need for a training program. Initially they were openly hostile to the idea and skeptical and cynical as to its value. We listened carefully. The aircrew were not prepared to cooperate until they felt we had recognized and appreciated their feelings on training generally and organizational issues in particular. Once this had been done they provided very valuable information with case examples and agreed that we should continue our discussions with them .

Remuster of the Line Crews

After the first line crew meeting we sketched out a preliminary design for the program based on educational design principles and what we had picked up from the meetings. We then met the group again in a one-day meeting and asked them to debate our initial design and put forward constructive proposals.

On this occasion the meeting was more positive and oriented toward specific problem-solving. The members attending also included senior union representatives and by the end of the day most participants were sufficiently well-disposed to the initial plan to go forward and talk positively to their colleagues. We believe this part of the consultation process was invaluable in gaining overall acceptance of the final design.

Flight Standards Meeting

At the annual meeting of all those involved in flight training and checking an opportunity was provided for one of the design teams to outline the initial plans and gather the reactions of the sixty members attending. This proved to be a successful consultation process. Most of the senior pilots and flight engineers attending were impressed that the training workshop would be based upon real issues involving their own airline rather than a system which had been imposed from outside.
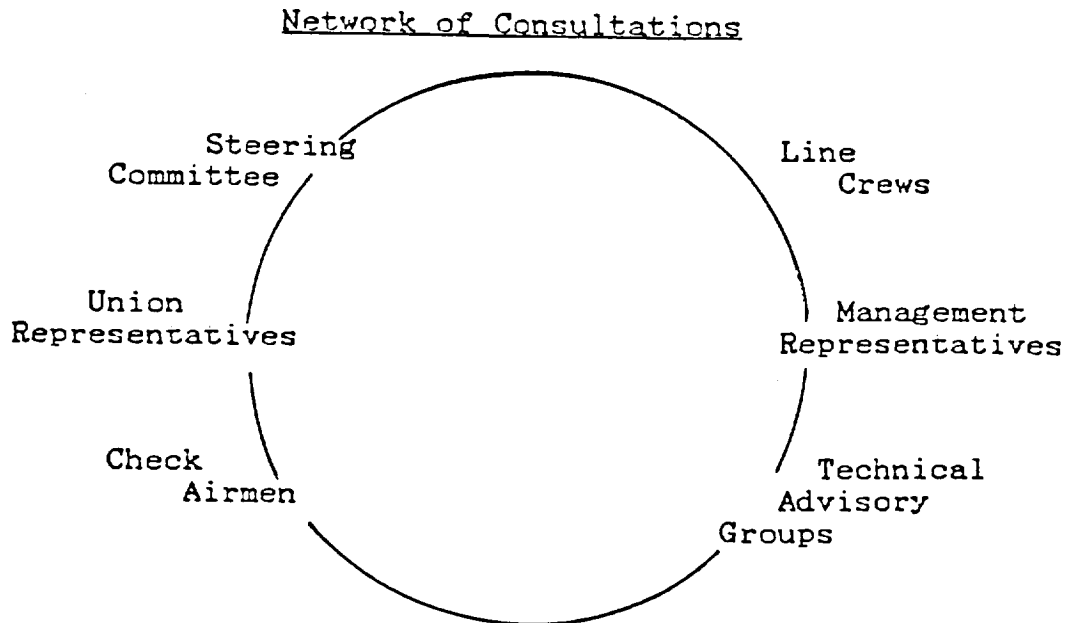
Other Consultative Efforts

In addition a questionnaire was circulated to all aircrew. However, there was a reluctance amongst aircrew to reply to this and a very low response rate was gained. Clearly the personal meetings in which people could talk were favored rather than each person having to write things down.

A number of other opportunities for consultation, which in retrospect could have been very important were planned, but for various reasons did not occur. It was, for example, planned to have airport meetings with pilots. However, these were initially postponed and then later cancelled due to organizational difficulties.

The major lesson which we learned is that consultation is not a luxury or something that you add on if you have time. It is an essential prerequisite to any successful aircrew training initiative. The very fact that aircrew members were involved was a

vitally important ingredient in gaining their support and commitment to the whole venture. In all, we involved about 100 aircrew in the pre-program briefings and discussions. These people set the climate of opinion amongst their colleagues that ATM was worth considering and that helped change some peoples attitudes towards a more open-minded approach. We believe this was critical in acceptance of ATM.

Network of Consultations

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              Steering                    Line
            Committee                       Crews

       Union                                     Management
   Representatives                          Representatives

       Check                                    Technical
         Airmen                            Advisory
                                        Groups
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Reactions from the Aircrew

Comments from aircrew members early in our involvement indicated the lack of support that had to be overcome. One comment that received general support was, "there are a lot more important issues which management should be dealing with before they put us on a course on cockpit management". Another line crew member suggested, "senior members should go on a management course before they put us through one". The consultative process therefore indicated clearly that the line crews were not initially enthusiastic about a cockpit management program. They saw the TAA safety record as one of the best in the world and therefore strongly questioned the value of spending money in this area. Some pilots also saw the intended program as a "slight on their professional ability".

Through discussion and consultation these issues and concerns were thoroughly debated and people's feelings and frustrations were freely aired in the line crew workshops. We were asked to illustrate some of the methods for developing more effective teamwork and in the end commitment grew through involvement.

Therefore we would strongly urge any airline contemplating ATM training to take the time and the trouble to consult directly with the line crew. Many of the comments and views that they express will not always be supportive but if they are recognized and

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understood, such points can make an enormous contribution to the end result.

There may be an inclination by airline management to implement a solution once it is available because they have lived with the problems for such a long time. They feel they already know what is required and therefore only need the method. Indeed, the line crews we consulted felt very much that they knew what the problems were and could also advance many of the solutions.

However, and this needs to be stressed, our consultative procedures were the first time that captains, first officers and flight engineers had been brought together in the same room to discuss the specific issue of cockpit management. Because of the nature of the job and the contract arrangement for their employment it is not the norm to have line crews meet and discuss in depth how cockpits are managed. The consultative approach adopted clearly reflects the support of the present senior management of TAA for this approach and indicates a change from the previous style and culture.

Beyond these consultations we also did considerable research looking at incidents and accidents on a worldwide basis.[1] From this we identified a key list of issues which we put to the pilots of TAA to see if these reflected the sort of issues which should be incorporated into an aircrew team management program. The list that we produced has been summarized below and reflects in brief the particular points that we addressed in our educational design.

SOME EXAMPLES OF TEAM MANAGEMENT PROBLEMS IN THE COCKPIT

Lack of Support - where one crew member fails to back up another, during high workload situations.

Standard operational procedures ignored - for example, where the captain and crew fail to complete a checklist under time or other pressures.

Stress problems - where a crew experiences difficulty in adapting to unusual emergency situations.

Judgement problems - where management of priorities and cockpit distractions distort the judgement process.

Emotional problems - where aggression or extreme submissiveness in the cockpit affect personal relations, or where there is a carryover, for example, of domestic worries and conflict to the job.

Get-home-itis - where failure, for example, to divert or "go round" in risk situations occurs.

Management pressure - where there is a deferral to management authority, for example, in expediting departure before the crew is sufficiently prepared.

Discipline problems - where corners are cut and there is inadequate control of operations in the cockpit.

Leadership problems - where the captain does not delegate adequately.

Communication problems - where there are misunderstandings or lack of conversation control.

These were some of the key areas that crew members agreed should receive attention in any specially-designed workshop. It was upon this and other data that we therefore began the process of design.

SECTION C: EDUCATIONAL DESIGN AND DEVELOPMENT

We started the assignment on a consultative basis and this was continued also at the design stage. The first step in this was to work with the Steering Committee on the broad policies and principles governing the training workshop. The Steering Committee discussed in detail the key issues arising from the research and came to agreement on the main features of the workshop such as the length, the content, and the learning methods to be used.

The Technical Advisory Groups

A major decision of the Steering Committee was to establish several Technical Advisory Groups. These groups were made up of line pilots and flight engineers who were seconded on a part-time basis to work with the design team in providing specific cases and illustrations. This became a vital part of the whole design process. The actual content of the workshop was heavily influenced by the Technical Advisory Groups. Also, cases and program material could be continually checked for technical accuracy and relevance.

A particular example of this was in the construction of five videos which were made to simulate particular incidents in aircrew team management. All five incidents were based upon in-depth discussions with advisory group members. These members were directly involved with the design team and assisted with the preparation of scripts for the videos. Moreover, when the videos came to be made in the television studios, three pilots made themselves available on a voluntary basis to attend sessions at which filming took place and to give the actors technical advice on their roles.

The realism and high technical quality of the videos is a testament to the detail and attention paid by the Advisory Group members and the professionalism of those involved in producing the videos. The design stage is a make or break process in any

training innovation. It was certainly so in this particular event. Although we had gathered a considerable amount of information from aircrews, we now had to mold this into a practical and relevant framework which would be of benefit to them in their jobs.

Content Issues

As a result of our consultative meetings, it became clear that there should be three major features which required priority in any teamwork training program. These dealt with personal understanding, skills of working with other people, and skills in organization. The box below summarizes the key points.

AIRCREW TEAM MANAGEMENT

Key Elements

Issues	Methods
1. UNDERSTANDING ONESELF & OTHERS	- PERSONAL PROFILES & - DISCUSSION VIA THE TEAM MGMT. INDEX
2. COMMUNICATION SKILLS	- CONVERSATIONAL CONTROL - COMMUNICATION STYLES - EXERCISES & ROLE PLAY
3. TEAM SKILLS	- TEAM WORK & DECISION- - MAKING SIMULATION

After discussion with the Steering Committee and Technical Advisory Groups, it was agreed that these items should form the basis of the program and that specific examples, illustrations, applications, and models should be designed to bring these areas to life. It was at this point that we began to mesh educational technology with the aims of the program.

Scheduling and Location

Trans Australia Airlines arranged for the ATM workshop to be a three-day live-in event held at a residential training college pleasantly situated on the shores of Port Phillip Bay in Melbourne, Australia. It was felt important the event should be away from the airport and the usual technical training facilities. It was also noted that the crews were not predisposed to the classroom situation and that they would react unfavorably to long periods of lectures by "experts". It was important to reflect the real issues that take place in the cockpit, in a practical and participative educational design.

Video Simulations

One of the main ways we reflected the work of aircrew was to produce videos on five flight situations. These videos were shot in the simulators, at airports and in the studio. In all, about 50 minutes of video are used over the three days, as models of effective and

ineffective teamwork. Learning by observation (behavioral modeling) is an important principle of adult psycho-educational design and it is discussed in more detail in one of our supporting papers on ATM.[2]

The issues identified in the videos are the way in which an aircrew deals with such problems as:

        o   a delay and rescheduling before take-off

        o   a critical situation occurring at take-off

        o   a critical problem such as a fire at cruising altitude

        o   difference of opinion between crew members on landing

        o   a conflict occurring in a two-person crew.

These videos are designed to show both effective and ineffective practice but concentrated more on the latter to highlight the particular problems that need to be overcome. It is noteworthy that crews have since indicated that it would be extremely valuable to have another video made which shows major problems where the crew handle them in "copybook" style. However, in our experience videos containing a mixture of good and bad points promote better discussion.

Group Discussion Time

Associated with the videos, which are shown at particular points on each of the three days of the workshop, are group discussions in which the participants have an opportunity to discuss in detail the issues of team management. They feed back their views to plenary sessions and also have workbooks where they can make comments and note their suggestions for improving the performance of the cockpit crew shown in the video.

Role Play Skill Practice

Another key feature of the design which enhances the active participation of aircrew are the role plays. This is a commonly-used technique in management courses but is not extensively used in aviation. It enables people to both experience and practice new ways of relating while reinforcing the old, well-established methods that have been proved to work. The role play situations again try to reflect real-life dilemmas and problems in the cockpit as well as those encountered with management outside the cockpit.

Rather than just asking aircrew members to become actors we provide throughout the workshop key guidelines on techniques that can be used to enhance performance in such situations. Particular attention is paid to the techniques of conversational control and communication styles. This work, which has been developed by the authors, has been specially adapted for aircrew members and special materials have been prepared.

KEY ELEMENTS OF THE PROGRAM

Understanding Oneself and Others

A major feature of the ATM program is the opportunity for participants to gain greater self-understanding and a framework in which to understand themselves and others more clearly. This has been done through use of the Team Management Index-- an instrument designed by the authors and is used internationally by organizations such as Hewlett-Packard, DuPont and Shell.[3] We have tested the Index for its reliability on an aircrew sample and adapted the profiles specifically to the needs of aircrew.[4]

The Team Management Index is a sixty-item questionnaire which is based around four key factors dealing with:

     o how people relate with others

     o how people gather and use information

     o how people prefer to make decisions

     o how people organize themselves and others

These are key issues in any cockpit where people have to establish good working relationships, share information, make decisions and organize operations.

After the Team Management Index is completed, the results are fed into a computer software program and each participant receives a 3,000 word personal printout outlining their own work preferences within the context of a model which enables them to understand how they relate with others. Initially there was a high degree of skepticism amongst aircrew members to this idea prior to seeing it in practice. They objected to the use of anything that looked like a "psychological instrument".

The subsequent reaction is the very opposite of the original concern. Aircrew members find the profiles particularly helpful as indicated later in the assessments that they have made. A large number of the participants particularly pointed to the value of having a practical way of gaining self-understanding and being able to have a better understanding of colleagues. There is now no objection to the use of the Team Management Index and it is generally regarded as an integral part of the overall program.

Communication Styles and Skills

Attention is also paid to communication styles. A major input here involves the presentation of a model with practical advice on how to deal with the aggressive or submissive crew member and how to become a more assertive and supportive team member. Again, these principles are reinforced by group discussion, behavioral modeling, role play and team exercises.

Cockpit communications is a key to effective teamwork and needs to go beyond a general understanding of styles. Considerable attention is therefore given to communication skills. Major communication skills are outlined in the Conversational Control Model. Exercises are provided to give participants a chance to experiment and practice with such skills as summarizing, reflecting, directing, proposing, diagnosing, problem and solution enquiry, and information provision.

Substantial research has isolated the importance of communication skills as essential to effective teamwork. The Conversational Control Model provides a simple and easy-to-use system for aircrew to enhance their skills in this area. It provides a "common language" to facilitate greater understanding and speedier, more effective dialogue.

Team Decision-Making Skills

A further key aspect of the design is the emphasis put on team decision-making. All crews have to reach decisions, often under tight time pressures. Therefore the Aircrew Team Management Workshop includes a number of special group exercises to help crew members develop skills in problem-solving.

Special guidance is provided through team management decision-making models. In the aircrew management workshop we introduce the concept of SADIE. This mnemonic is a shorthand for a set of important problem-solving steps which involve the following activities.

1) Sharing information

2) Analyzing information

3) Developing solutions

4) Implementing decisions

5) Evaluating performance

Through such guiding principles the aircrew members have a basis for practicing teamwork to ensure that information is shared before solutions are developed or action taken. The record shows that aircrew find this system helpful. In particular the fifth element, that of evaluating performance, is now stressed by many participants as a key factor in their own learning on the job.

SECTION D: IMPLEMENTATION AND INSTRUCTION

Line Crew Group Leaders

The management of TAA indicated from the outset that the actual workshop would be tutored by line crew members. Management, check and training airmen were not included as group leaders. Our task as designers was to develop and test the prototype

program and deliver all of the associated educational materials and resources.[5] In addition we also tutored the first live program. From a number of volunteers, ten line-crewmembers were selected to become tutors of the program and in addition there was one member made available by the Flight Standards Division for backup support as and when required.

All of these line crewmembers attended the prototype program and then sat in during the first workshop tutored by the designers. However their task during the first workshop tutored by the designers was not to observe but to practise the management and delivery of the workshop. Because of its participative nature the workshop requires facilitation and consultation skills rather than traditional teaching.

The line crew tutors are therefore called Group Leaders. In all, they had eight ATM-dedicated days intensive preparation inclusive of going through the prototype program. The training involved practical demonstrations and each person had the opportunity to see themselves managing all of the sessions as we recorded their performance on close-circuit television. They were able then to take the videotapes home and restudy their performance. The ATM-related training was followed by a two-day instructional techniques course which included tuition in the use of classroom equipment and training aids.

The ATM workshop is organized so that it can be taught by two Group Leaders working as a regular team. It is estimated therefore that by the time all of the 600 aircrew have participated each of the Group Leaders will have, on average, tutored eight workshops. The results of their performance in this role are impressive. The line crews have high praise for the way in which the Group Leaders undertake their role.

Likewise the Group Leaders have said that the educational design and the materials provided have made it a task well within their grasp. They manage rather than teach. In short, the workshop is an adult-learning activity where people are able to share and compare their experience of team management in the cockpit and the Group Leader's job is to facilitate this.

Pre-Workshop Preparation

A further keypoint of note in implementation is the pre-work which all participants are asked to complete prior to coming on the workshop. As part of our consultation we inquired what aircrew would regard as reasonable given that we felt it essential that people have some understanding and background to the workshop prior to attendance. It was agreed that somewhere between two and five hours preparation would be appropriate. Therefore each person receives a booklet of materials giving an outline of a variety of actual aviation incidents and accidents and other reading material relevant to the workshop.

Learning by Doing

The workshop is designed upon sound educational theory and principles and is best viewed as a structured learning experience. Air crew members have the opportunity to learn through observation, through discussion, through simulated practice, through self-

understanding, through decision-making and other such practical methods. In all the whole workshop is based upon the principles of psycho-educational design which have emerged from many research studies worldwide. In particular we have ensured that many different types of learning experiences are used and have put together a design which minimizes the chance of participants "opting out" or falling asleep! There is a high level of activity with tuition sessions kept to a minimum and learning by doing in role plays, team exercises and group meetings having priority.

SECTION E: EVALUATION AND ASSESSMENT

It has been noted that up to now there is little research evidence to show that programs such as ATM have any marked effect.[6] There may well be an initial positive reaction from the participants, as there has been with the ATM workshop, but the question is, does performance improve? We are therefore actively involved in evaluating and assessing the work that we have done.

In one sense it is difficult, if not impossible, to assess effectiveness in this area. Such workshops on cockpit management are rather like an insurance policy. You will only know when they do not work insofar as there is no decrease in human factors-related incidents and accidents.

Also, ATM is a program of intensive training and development to enhance skills and maintain the already high levels of safety. The question perhaps that one needs to put is what would happen if this form of training is not done. It may well be that incidents and accidents would then increase. In a company such as TAA that has had no accidents in Australia in over 25 years, a measure could be the reduction of simulator recurrent training failures that have been identified as human-factor related. There is an argument therefore to say that this form of training is about maintenance of high standards as well as specific improvements.

Current Assessment of Post-Training Attitudes

However in an airline that already has a high safety record we think it is particularly important to obtain some sort of post-course evaluation so that a measure of the "transfer of learning" can be obtained. One obvious way to do this is to ask participants what they think about the program. This form of subjective measure is regarded by some people as an insufficiently hard measure of performance. However, it does measure attitudes and these do have an effect, in the long-term, over performance.

In the final session of the ATM workshop, participants are asked to complete a short semi-structured questionnaire evaluating the workshop.[7] Responses from the first 97 to have completed the workshop were summated and results for the major questions are provided below.

A major area of importance is, of course, the relevance of workshop concepts, methods and planning tools to the work of aircrew.

Table 1 shows that, on a scale from 1 (irrelevant) to 5 (highly relevant), 100% rated the workshop as a least partly relevant. Such "perceived relevance" is a necessary even though not a "sufficient" factor for transfer of learning back to the workplace[8] and therefore is an essential property of any cockpit training programme.

TABLE 1: RELEVANCE OF THE WORKSHOP

How RELEVANT was the workshop to the work of flight crew?

		%	Cumulative
Irrelevant	(1)	-	-
Little Relevance	(2)	-	-
Partly Relevant	(3)	4	4
Very Relevant	(4)	50	54
Highly Relevant	(5)	46	100

Mean = 4.42; Standard Deviation = 0.57

We also asked participants how useful they found the ATM program. Their responses show a high level of agreement as to its usefulness. Table 2 shows these findings with 93% of participants rating the workshop either as useful, very useful, or highly useful.

TABLE 2: USEFULNESS OF WORKSHOP CONTENT

How USEFUL was the content of the material covered in the program?

		%	Cumulative
Not Useful	(1)	-	-
Partly Useful	(2)	7	7
Useful	(3)	33	40
Very Useful	(4)	51	91
Highly Useful	(5)	8	100

Mean = 3.60; Standard Deviation = 0.75

We also asked a general question on how valuable the ATM Workshop was in particular areas. Table 3 presents data on the value participants attributed to each aspect of the ATM course as they related to their work. This time they were asked to rate each aspect from 1 (Not Important) to 3 (Very Important).

TABLE 3: PARTICIPANT RATINGS OF ASPECTS OF THE ATM WORKSHOP

What was the value to you of attending the workshop?

CATEGORY	Not Important (1)	Important (2)	Very Important (3)	Mean	SD
Self understanding & personal development	5	30	62	2.59	0.59
Developing interpersonal skills	3	34	60	2.59	0.55
Learning new techniques about team management	4	40	56	2.52	0.58
An opportunity to talk meaningfully about my job with colleagues	14	16	25	2.12	0.65
Learning about the managerial non-technical aspects of my work	20	49	28	2.08	0.55
Meeting colleagues I have not met before	24	53	19	1.97	0.70

Of particular interest is that aspects relating to interpersonal skills and personal development were rated most highly. Although the difference is not large, the participants rated these aspects even higher than the team management aspect of the course. Such a finding confirms the validity of a broad behavioral approach to this type of training, incorporating skills and communication training as well as team management concepts.

Finally, participants were asked to indicate whether they found attendance worthwhile. This is an important aspect of any course for aircrew, as such workshops could involve a degree of inconvenience to crew caused by roster-shuffling and the like. Table 4 shows that the great majority of aircrew found the workshop worth attending. More than two-thirds rated the course as either well-worth attending or extremely well-worth attending.

TABLE 4: OVERALL RATING OF THE WORKSHOP

How would you rate the ATM workshop overall?

		%	Cumulative
Not worth attending	(1)	-	-
Attendance of little worth	(2)	4	4
Worth attending	(3)	18	22
Well worth attending	(4)	46	68
Extremely worth attending	(5)	32	100

Mean = 4.06; Standard Deviation = 0.81

Other Areas for Assessment

In addition we are planning a follow-up study, if funds are available and if the airline will support it, to see if there are any observed differences, particularly in teamwork, during simulator sessions. We would like to conduct some "blind trials". One option is to have check-airmen assess the performance of teams in the cockpit without knowing whether or not they have completed the Aircrew Team Management program. Differences in rated performance could then indicate whether there are any changes in performance that could be attributed to ATM training.

In addition to this we are asking for self-report measures based on line operations. We are approaching a number of aircrew members asking them to identify incidents which they feel have been aided by their attendance at the Aircrew Team Management workshop. In addition we are asking the aircrew for an overall assessment of the way in which they see the management of the cockpit during line operations.

As with all such projects it can be said that far more attention needs to be given to assessment. In the reality of the day-to-day world the priorities are getting aircraft out on time, for people to undertake their simulator checks, and for management to keep operations going. Therefore the priority assigned to assessing a program such as this comes second to operational requirements. Therefore, as a general rule it is difficult to persuade the management of any airline to allocate resources to this area. TAA, however, has given their support to three levels of evaluation including the assessment of the participants reactions to the workshop, the post-workshop follow-up and a validity study on the Team Management Index as applied to airmen. TAA has their own plan to assess team management performance in the cockpit through the evaluation of simulator sessions. In the industry as a whole, however, we believe a commitment to evaluation will only come if it is introduced by outside regulatory agencies. It helps to have such backing when requesting funds for support.

Conclusion

Indications show that the Trans Australia Airlines Aircrew Team Management

program has been accepted by line crew as a valid and relevant form of training. The level and quality of the instruction is of a high order. The design of the program facilitates practical skill learning.[9,10] The reported assessments by those attending indicate that it is practical and useful. It remains to be seen whether all of this converts into more effective performance.[11] We believe it does, but time will tell.

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